

# Sticks and Stones

**Skills:** Science, Social Studies, Science

**Objective:** Students will design and construct simple agricultural tools.

## Background

What would you use if you wanted to clear a space in the grass for a garden? A garden fork or good sharp spade would help you cut through the sod and loosen it enough to clear it out. A hoe would help you break up the dirt clods. But what if you lived in an age when you had to make your own tools, with nothing but sticks and stones? In grassy places like those that cover Oklahoma, farming with sticks and stones would be impossible. Sticks and stone tools will not cut through dense grass roots. The first farming started in flood plains and swampy areas around the Nile, Tigris and Euphrates Rivers, in what is now Egypt, Turkey, Iraq and Iran. In these areas the ground was soft and loose, and the farmer could work the soil and plant seeds gathered from the wild. But farming would not have been possible on the grasslands of Oklahoma until humans learned to make metal tools. In fact, it wasn't until John Deere invented a steel-tipped plow in 1838 that farmers were able to successfully farm the American Great Plains.

Prehistoric farmers made tools of sticks and stone. Early toolmakers would chip stones by hitting one against another to form an edge that could be used for cutting. The first agricultural tool was probably a digging stick, a straight, sharp stick used for digging roots out of the ground to eat.

Later someone got the idea to weight the stick with a stone or use a forked stick with one side cut short. That way the farmer could use his or her foot to push the stick deeper into the ground. This design would be used later to develop what we know as a shovel or spade.

Another way to use the forked stick was for the farmer to hold onto the largest limb and pull it along behind so the short, pointed fork would cut into the ground. This was the design used later to develop the plow.

Another early tool was the scythe. The Stone Age farmer used this tool to cut tall grass. The grass could be used to cover the walls of a hut and to make mats to cover the floor for sleeping. The sickle could also be used to cut the grains the farmer had planted.

Once the grains were harvested, they were probably roasted and stored for later use or ground into flour on a grinding stone. The grinding stone was a saddle-shaped stone. The grains would be spread out on the grinding stone and crushed with a hand-held stone, called a quern. Sometimes the grains would be crushed in a mortar and pestle. A mortar is a hollowed out stone vessel. The grains or seeds would be crushed with a club-shaped pestle.

P.A.S.S.

GRADE 3

**Science Process**—1.1,2;  
3.1,2,4; 4.3

**Earth Science**—3.2

**Social Studies**—1.2; 4.2,4;  
5.2

**Reading**—2.1; 4.1ab

**Oral Language**—1.1,2

GRADE 4

**Science Process**—1.2;  
3.1,3,4; 4.4

**Physical Science**—1.1

**Social Studies**—3.2; 4.2,3;  
5.1,2,3

**Reading**—1.1 3..1a

**Oral Language**—1.2,3

## Materials

assorted simple hand gardening tools and cooking utensils, e.g., nut cracker, mortar and pestle, hand trowel, weeding tool, gardening fork, watering can, pots and pans

sticks

stones

rawhide

straw

rope made from fibrous material like jute

vines

safety goggles

## Language Arts

1. Provide copies of the background above.
  - Discuss what simple tools students use in their daily routines (tooth brush, forks and spoons, pocket knives, etc.)
  - Brainstorm about the tasks early humans would have had both before and after the development of agriculture (finding food, preparing food—cracking nuts, grinding seeds, cooking, digging up roots, finding firewood, moving firewood, finding water, moving water, building shelter, making clothing, cultivating soil, planting seeds, feeding animals, etc.)
  - Ask students to consider what early humans might have used to accomplish these tasks.

## Science

1. Pass around the assorted simple hand gardening and cooking tools for students to examine.
2. Discuss safety in use of tools.
3. Provide materials listed at left.
  - Instruct students to design and construct simple tools that can be used to complete one or more of the tasks defined in the class discussion above.
4. Create a display of the student-designed tools.
  - Have students create labels to explain the tools' functions.
5. Have students use their hand-made cultivating tools to cultivate a flower bed outside. Provide seeds for students to plant.
6. Bring peanuts or sunflower seeds to class for students to grind with their hand-made grinding tools.
7. Review simple machines (lever, pulley, inclined ramp, etc.).
  - Have students identify the simple machine or machines used in the tools they have designed.
8. Bring a mortar and pestle to class.
  - Let students take turns using it to grind fresh herbs or garlic.
  - Mix the pulverized herbs with cream cheese, and let students spread it on crackers to eat.
9. Let students experiment with grinding other materials they find in or out of the classroom—chalk, grass from the playground, etc.
10. Bring in a bag of agriculture-related tools, or ask a farmer or equipment dealer to bring some in.
  - Have students discuss the possible uses for the tools before telling them.

## Social Studies

1. Bring native (hard shell) pecans or walnuts to class, and give two or three to each student.
  - Tell students to pretend they belong to a hunter-gatherer society which has just found a grove of pecan or walnut trees. They have never seen the nuts before but think they might be good to eat.
  - Challenge students to go outdoors and use whatever natural materials

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they can find to get the nuts open. (They must not use their shoes since hunter-gatherers probably didn't have hard shoes.) Have students report back to the class on what they used to open the nuts.

2. On a world map, have students locate the Nile, Tigris and Euphrates Rivers.

### Extra Reading

Bender, Lionel, *Invention*, Eyewitness Books, Knopf, 1991.

Collins, David R., *Pioneer Plowmaker: A Story About John Deere*, Carolrhoda, 1990.

### Vocabulary

**digging stick**—A straight, pointed stick, sometimes weighted with a stone, used in digging up roots and later for soil cultivation.

**grinding stone**—A saddle-shaped stone used with a hand-held stone to crush grain and seeds.

**mortar**—A vessel in which substances are crushed or ground with a pestle.

**pestle**—A club-shaped hand tool for grinding or mashing substances in a mortar.

**quern**—A hand-held stone used for crushing grains or seeds against a flat grinding stone.

**scythe**—An implement consisting of a long, curved, single-edged blade, with a long, bent handle, used for mowing and or reaping.